

CONFERENCES

→ IMPERIAL AGRICULTURAL RESEARCH
CONFERENCE, 1927.

Agenda : Memorandum 4.

REFERENCE
ONLY

Interchange of Information.



Issued by the Organising
Committee of the Conference,
10, Whitehall Place,
London, S.W. 1.

September, 1927.

LONDON :
PRINTED UNDER THE AUTHORITY OF HIS MAJESTY'S STATIONERY OFFICE
By WYMAN & SONS, LTD., FETTER LANE, LONDON, E.C.4.

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Interchange of Information.

This subject is intended to be confined to the interchange of information on the methods, progress, and results of agricultural research *between research and other officers concerned with agriculture* in different parts of the Empire. The question how the results can best be brought to the notice of the practical farmer raises another set of problems, of which the solutions must vary with the local conditions of each part of the Empire, must therefore be left primarily to the Government of that part, and do not seem to require any central organisation with executive functions. Nor is it proposed that the present subject shall be taken to include interchange of information by personal contact; the problems involved in this last matter are dealt with in separate documents on the interchange of workers and on the holding of periodical Conferences. The question is therefore narrowed down to the interchange of information through correspondence and publications.

- (1) The present position as regards publications is as follows :—
 - (a) Papers by agricultural research workers, at all events in Great Britain, are published in many different technical journals as well as in journals and leaflets of the Departments of Agriculture, and in Annual Reports and separate Bulletins of Research Institutes.
 - (b) The Ministry of Agriculture has made attempts to bring together in one volume the results of agricultural research work in this country ("Agricultural Research and the Land," by Mr. V. E. Wilkins, published by the Stationery Office) and it is intended to bring this volume up to date from time to time.
 - (c) The Ministry publishes a series of agricultural research monographs dealing with the work undertaken and in progress, in various branches of agricultural research in this country.
 - (d) An annual paper of the Agricultural Research Council sets out year by year lines and results of work and gives particulars of the papers published during the year by the

various Research Institutes in Great Britain. This list is believed to be reasonably complete and would be suitable for despatch throughout the Empire (or to any central body which might be established) for the purpose of bringing Oversea workers in touch with the work done here. It may be added that on the proposal of Australia the Ministry has caused to be prepared for the information of the Conference abstracts of all papers published by research and advisory workers in Great Britain in the six months, October, 1926—March, 1927. These abstracts are printed as a separate Conference paper. It is proposed in future to amplify the Research Council paper in this way, which will add to its value for circulation throughout the Empire.

- (e) Accounts of recent work and in some cases lists of publications have been supplied for the present Conference from Dominions and Colonies. These accounts have, for the most part, been incorporated in the Conference paper dealing with agricultural research in the Overseas Empire; reference to recent work will also be found in the Agenda Memoranda dealing with technical questions. The lists of publications are available for consultation if desired.
- (f) There is an extensive interchange of publications dealing with agricultural research between Great Britain on the one hand, and the Dominions and the Colonies on the other, both by Government Departments and by Research Institutes. Particulars of this interchange are given in a Conference paper; but it is probably very incomplete, both as to the publications despatched and to those received.

(2) *Defects.*

There appear to be two obvious defects under the present arrangements:—

- (a) Papers printed and published, particularly in the Dominions and Colonies, may not be known outside the place of origin, and may even be forgotten there within a few years.
- (b) Occasionally a valuable piece of work may not be published at all, and in the absence of publication, either of a full paper or at least of a summary, may be entirely lost.

(3) *Suggestions for a remedy.*

- (a) It is clearly necessary in the first place that there should be available periodically for each country a complete list of papers published by research workers and at least a summary of any unpublished work of importance. The arrangements for the preparation of these documents

must obviously be left to the respective Departments of Agriculture. It might be well that the Departments should require workers to furnish short summaries of papers which they have published in order to give an idea of their contents and conclusions. This method would not be expensive: it would ensure that the author's views were not misrepresented, and would involve little trouble for the research worker. In fact, the practice is now becoming common. The importance of an adequate Annual Report by each Department of Agriculture is stressed in a memorandum by Dr. E. J. Butler (Appendix, Paper 4).

- (b) What is to happen to this list of papers and summaries when prepared? It would of course be possible simply for each Government to send a copy or copies to the other constituent parts of the Empire; but it seems clearly more convenient that there should be some central body or bodies to whom the list of papers and summaries should go from every part of the Empire and who would be charged with the duty of collecting, reviewing and circulating them.
- (c) The question then arises whether there should be one central body or more than one for this purpose. In this connection it may be useful to state the present arrangements on this point. The Imperial Bureaux of Entomology and Mycology publish monthly journals containing abstracts of the work done in their respective branches of science. The Empire Cotton Corporation acts as a clearing house of information on cotton research within the Empire. The Lovat Committee has suggested that the Imperial Institute should deal with the subjects outside the purview of the two existing Imperial Bureaux. The Colonial Agricultural Research Service Organisation Committee contemplates that one of the important matters falling to the proposed Colonial Agricultural Research Council will be the collection and publication of information where this is not already done by existing agencies (Appendix, Paper 3). The Government of India has suggested a special Publicity Bureau (Appendix, Paper 5), and the Union of South Africa the establishment of an Imperial Research Committee (Appendix, Paper 6 (b)).

The main arguments in favour of specialist Bureaux undertaking this work seem to be as follows:—

- (1) On two important subjects, such Bureaux are already in existence and are doing the work with general acceptance.
- (2) The Bureaux will have specialists competent to assess the merits of papers, and it might be urged that there

will be a duplication of staffs if similar specialists were attached to a separate Publicity Bureau.

(3) Specialist Bureaux can deal far more easily and directly than a general Publicity Bureau with the technical correspondence and enquiries which are likely to arise out of the publication and interchange work.

On the other hand it might be argued in favour of a single Publicity Bureau, that

(1) Agricultural Departments would need to send their lists and summaries to one body only, and not to several. Papers often bear on several different branches of research ; and a single Publicity Bureau would relieve the Departments from the task of deciding which was the most important subject in such cases ; or, in the alternative, of sending the lists and summaries to several Bureaux.

(2) Scientific workers and administrators are usually anxious for information on several branches of research, and therefore would need to be supplied with the publications of several Bureaux instead of one, if interchange through specialist Bureaux were adopted.

(3) Concentration of the interchange and publication work under one body would *prima facie* mean economy in expenditure.

There is perhaps something to be said for a compromise, viz., that there should be one body to whom all the lists of papers and summaries would be sent ; which body would distribute them again to the appropriate Bureau or Bureaux, sending e.g. mainly mycological papers to the Imperial Bureau of Mycology. If this suggestion were adopted, the Imperial Institute or a special Committee working in close connection with it would seem to be an appropriate body to whom all papers should be sent in the first instance. Steps in this direction have been taken on the initiative of the Director of the Institute : the Dominions and Colonies have been asked whether they can arrange to send to the Institute every six months summaries of research work on raw materials. The Institute intends to publish this information in its Quarterly Bulletin (*See Appendix, Paper 1*).

In this Memorandum the question of the interchange of information by correspondence is not specifically touched. Workers will presumably communicate direct with each other on matters on which they find (as a result of seeing abstracts in Bulletins) that they would like further information. In this connection the list of Agricultural

Research Workers within the Empire prepared for the present Conference may be of value. Nor does this Memorandum touch the question of the central body printing and publishing *in extenso* technical papers by research workers. Ordinarily such papers would be printed locally; but in exceptional cases a central body would no doubt be able to arrange for publication either in the journal of the appropriate specialist Bureau, if one existed, or in one of the unofficial technical journals, such as the Journal of Agricultural Science, or the Journal of Pomology.

There are two further points. First, this Memorandum has not mentioned the question of papers and summaries by workers other than those engaged in agricultural research; although much matter bearing directly or indirectly on agriculture is published by workers in other sciences, e.g., Mathematics, Biology, Physics, Zoology, Engineering, and Economics. The sources of such matter are so numerous that if they were included, any scheme for the interchange of information might become unworkable and break down under its own weight. The same difficulty arises in regard to agricultural research work done outside the Empire, although the two Imperial Bureaux have been able to cope with all available published material whatever its source, dealing with entomology and mycology. It would perhaps be best to go step by step and to obtain satisfactory arrangements for research work within the Empire before attempting expansion in such directions; but of course the inclusion of agricultural research work of value done outside the Empire is important and its possibility ought not to be overlooked.

Lastly, it will be noted that discussion has been confined to interchange of information *on current work*. In course of time, however, an organisation dealing with this subject will be able to supply references to past research. Until then it will presumably be necessary to refer enquirers to suitable indexes and bibliographies, and to indicate libraries where Bulletins, &c., can probably be consulted. In this connection attention may be drawn to the subject-matter index of the Science Library, South Kensington, attached to the Science Museum. A descriptive pamphlet of this Library is circulated separately to the Conference, and special arrangements have been made for a conducted visit by the Conference. The Empire Marketing Board are also assisting the compilation of information regarding the present state of knowledge in certain subjects of agricultural research.

Information Personal touch
Examination of Specimens Control Studies
Knowledge of the conditions
Advice on supplies
Legislative & the danger of outbreaks in other countries
Annual Reports

APPENDIX.

1. Imperial Institute Memorandum : The Imperial Institute as a Clearing House of Information.
2. Lovat Committee Recommendations. Collection and Dissemination of Information to the Colonies.
3. Recommendations of the Colonial Agricultural Research Service Organisation Committee.
4. Memorandum by Dr. E. J. Butler : Publication of Annual Reports.
5. India, Memorandum : The Desirability of Establishing a Publicity Bureau.
6. Union of South Africa, Memoranda : (a) Publication of Scientific Papers ; (b) Establishment of an Imperial Research Committee.
7. Nigeria, Memorandum.
8. British West Africa Agricultural Conference : Resolution.
9. Gold Coast, Memorandum.

Notes.

(1) A statement showing the interchange of publications between Great Britain and Northern Ireland and the Overseas Empire is issued as a separate Conference Paper.

(2) Abstracts of Papers on Agricultural Research in Great Britain in the six months October, 1926—March, 1927, are issued as a separate Conference Paper.

(3) A list of agricultural research workers in the Empire is issued as a separate Conference Paper.

(4) A pamphlet of the Science Library will be presented to members of the Conference.

(5) A copy of Agricultural Research Council Paper No. 70, being reports of Research Institutes in Great Britain for 1925-26, will be presented to members of the Conference.

(6) A copy of "Agricultural Research and the Land," by V. E. Wilkins, will be presented to members of the Conference.

(7) Other Conference Papers bearing on the question are :—

Agricultural Research in Great Britain and Northern Ireland ;

Agricultural Research in the Overseas Empire ;

Agenda Memorandum on Imperial Bureaux.

1. IMPERIAL INSTITUTE MEMORANDUM.

The Imperial Institute as a Clearing House of Information.

The Imperial Institute has endeavoured to carry out its function as a Clearing House by systematically collecting and indexing information relating to the production and utilisation of all classes of raw materials. The annual reports and other publications of the technical Government Departments in the overseas countries of the Empire are regularly received in the Library, as well as reports of similar departments in foreign countries. In addition, about 590 technical periodicals both English and Foreign, are received. Special indexers, assisted by officers of the Intelligence and Investigations Sections, are constantly engaged in indexing this literature, and the information thus collected is available for answering enquiries, for use in connection with investigations of raw materials and for publication in the Bulletin.

The principal channel for disseminating the information thus collected is the quarterly "Bulletin of the Imperial Institute," each number of which includes (1) Reports on recent investigations at the Institute, (2) special articles, (3) abstracts of recent literature, (4) a current bibliography and (5) reviews of books received. The abstracts of recent literature summarise the more important recently-published papers relating to tropical agriculture and forestry and are arranged under the different groups of products; whilst the bibliography, also classified under products, gives references to all the important reports, articles, &c., contained in recent numbers of publications received in the Library of the Institute. The object of both these sections is to keep officers of technical departments overseas in touch with the work carried out elsewhere on particular crops and products.

One disadvantage encountered in disseminating the results of the work of the agricultural and forestry departments of the Dominions, India and the Colonies is the fact that the printed annual reports do not reach the Institute until nine to twelve months after the period to which they relate. The information they contain is therefore not up to date when received at the Institute and may indeed have been modified by more recent work. With a view to obviating this defect and rendering the information given in the Bulletin as up to date as possible the Director of the Institute has proposed an arrangement whereby the Directors of Agriculture and the Heads of other Technical Departments concerned should make a regular practice of sending to the Imperial Institute twice yearly on fixed dates, say on the 15th January and the 15th July, a brief summary of the research work regarding raw materials which they and their subordinates have accomplished during the previous six months, giving, in each instance, some estimate of the progress that has been achieved. The staff of the Institute would then analyse

these reports and produce in the next number of the Bulletin a survey of the work done and the progress attained in each part of the Empire. The matter inserted would be arranged under headings of products so that each officer interested in a particular product might see at a glance what investigations have been made in regard to it elsewhere.

It is hoped that such accelerated interchange of information would help to stimulate among all concerned the feeling that they are engaged in the important work of advancing not only the production and prosperity of one individual part of the Empire, but also of the Empire as a whole.

The Secretary of State for Dominion Affairs and Colonies has expressed his entire agreement with the Director's views and has asked the Governments of the Dominions and Colonies to consider whether the proposals can be given effect to.

The view of the Council for Scientific and Industrial Research, Commonwealth of Australia, of the above proposal is given below :—

COMMONWEALTH OF AUSTRALIA : COUNCIL FOR
SCIENTIFIC AND INDUSTRIAL RESEARCH.

Tenth Monthly Summary—June, 1927.

* * * * *

10. *Standing Committee on Agriculture.*—The first meeting of the Standing Committee was held at Adelaide on the 25th May last. The following are the more important matters dealt with :—

* * * * *

(c) *Imperial Institute.* Consideration was given to a despatch proposing that the Imperial Institute should act as a clearing-house of information on all subjects connected with the development and utilisation of raw products throughout the Empire. The proposal would involve the Departments of Agriculture preparing half-yearly reports on the progress of their researches. The Standing Committee considered that the preparation of the proposed information half-yearly would be inconvenient and undesirable. It was arranged that the heads of the State Agricultural Departments should send letters to the Director of the Imperial Institute explaining the difficulties in the way of furnishing special half-yearly reports, but promising to furnish copies of all publications issued by their respective Departments.

2. LOVAT COMMITTEE RECOMMENDATIONS.

Collection and Dissemination of Information to the Colonies.

The Lovat (Colonial Office) Committee* recommended that a clearing house for collecting and disseminating information on the results of agricultural research should be set up at the Imperial Institute—except for entomology and mycology for which arrangements are already made.

The following is extracted from the Committee's report :—

73. From the evidence laid before us we have reached the following conclusions:—

- (a) Existing arrangements for collecting and disseminating reports on agricultural work carried out in the non-self-governing Colonies are entirely inadequate.
- (b) Colonial Governments do not in general possess an adequate system of preserving and indexing the information which they receive.
- (c) It is true that, as a rule, reports are published in the Colonial departmental journals, and that these are circulated by the Colonial Government concerned to other Colonial Governments. But, apart from the manner in which the reports are presented, the system, even if full use is made of it, is faulty. Owing to lack of space, agricultural reports when published in departmental journals are often so condensed that much of their value as scientific documents is lost. (This is possibly one of the reasons why reports based on work of real importance have frequently escaped the attention and publicity which they deserved.) Moreover, the journals generally remain at the head-quarters of the agricultural department and so may easily escape the notice of officers in the field. Further, Colonial Governments have not been able to provide a regular staff of indexers, with the result that reports may never be collected and may soon be lost sight of, not to be recovered without such an expense of time as no officer can afford.

74. We are satisfied, therefore, that officers are often working upon problems without knowledge of the results already obtained by investigations into the same or similar problems. One instance given to us was so startling as to deserve special mention. We have been informed that a certain Colonial Government proposed to carry out investigations into a particular problem, when it was accidentally discovered that the same investigations had been made some years

* In the Report Cmd. 2825 (1927) pp. 32 to 35.

before in the same Colony; the agricultural department of the Colony did not even possess a copy of the report.

75. Money spent on agricultural investigation and research must, it seems to us, be largely wasted if the results obtained are not fully recorded and made available to all. We are aware that the task of dealing adequately with reports on agricultural work is a very considerable undertaking, and that it will be necessary to form a special staff for the purpose, but we are convinced that a drastic revision of the arrangements for collecting, sifting and disseminating information upon questions affecting the work of Colonial agricultural departments is essential in the interests of efficiency and economy.

At the same time, we wish to make it clear that no such revision is required in connection with entomological and mycological reports. The monthly journals issued by the Imperial Bureaux of Entomology and Mycology contain accurate abstracts of the work done in their respective branches of science. These Bureaux, it may be mentioned, abstract reports, etc., published in foreign countries as well as the Empire generally* and, in addition, the former publishes original papers in the *Bulletin of Entomological Research*.

We consider that the methods adopted by these Bureaux are admirable and provide a model for any similar work which may be undertaken in connection with agriculture outside these special branches.

76. We recommend that action should be taken on the following lines:—

(a) Agricultural officers, other than entomologists and mycologists, engaged on any work of permanent value, should be required to submit through the local Directors of Agriculture to a central clearing-house in this country a full report of their investigations. Reports of this nature by entomologists and mycologists should be sent to the Bureaux, which would continue to perform the duties of a clearing-house in their own subjects. The Colonial Government would presumably take any action which it might consider necessary to keep itself informed when reports of this nature are forwarded.

It is desirable, in so far as practicable, that the results of scientific and technical investigations should be presented in a form which will enable them to be truly comparable, or in other words, that the principle of standardisation should be adopted wherever possible. In technical investigations on timbers this is already done

* Some idea of the size and importance of this work may be gained from the fact that during the year ended the 31st March, 1925, the Bureau of Entomology published abstracts of 2,514 articles from some 1,200 periodicals in various languages, while the Bureau of Mycology published, in the year ended December, 1925, 1,450 abstracts from some 450 periodicals.

in the leading centres of timber research, *e.g.*, at Dehra Dun in India, at Madison in the United States of America and, under the auspices of the Forest Products Investigation Board, in this country. We think this principle should be kept in view even in the large class of investigations where its complete application is, at least as yet, not feasible. Thus, in researches pertaining to soil conditions, and especially in their relations to the cultivation of crops, the hydrogen ion concentration ought, where possible, to be given. Again, investigations involving statistical methods should always exhibit the extent of probable error, in order that their degree of validity may be reasonably estimated, and that they may be correlated with analogous investigations carried out elsewhere. Doubtless the Council, the creation of which we propose in Part III of this report, would press for such data, as the value of the information to be collated and disseminated would be thereby greatly enhanced. It obviously lies outside the scope of our report to attempt to do more than direct attention to this point, but we regard the *matter of such importance as to call for special mention*.

- (b) The central clearing-house should sift, index and collate the whole of the material so received, at the same time collecting, so far as possible, relevant information from other parts of the Empire and from foreign countries.
- (c) It should then prepare abstracts of all this material, for circulation in the form of a bulletin to all concerned.

It is suggested that abstracts should be grouped primarily by products, *e.g.* rubber, maize, sisal, but a further grouping according to the branch of agricultural science concerned might also be adopted, if feasible.

Having regard to the fact that the Empire Cotton Growing Corporation publish full information in their Bulletin as to cotton, it might be found unnecessary for the clearing-house to include in their Journal abstracts of reports dealing with that product.

77. Under such a system officers would be kept in touch with the latest developments in their own lines of work. They would know from the abstracts whether work of interest to themselves was being carried out elsewhere, and the clearing-house should be in a position to supply copies of the original reports for the immediate use of officers who apply for them. Meanwhile, a complete and fully-indexed library would be built up to which reference could be readily made by Colonial officers and all persons interested in the subject.

78. It is obvious that the clearing-house of information should be in this country if for no other reasons than that the majority of

Colonial officers spend their leave in this country and that, if the clearing-house were in London, they would have the best opportunity of visiting it and of consulting the library upon any matter in which they required the fullest information. On the assumption that this view will be accepted, we consider that the Imperial Institute is the body best qualified and adapted to organise this work, more especially as the collection and dissemination of information relating to raw materials is already included amongst its statutory functions.

79. We have good reason to think that the authorities of the Imperial Institute would be prepared to consider undertaking the work, and we recommend that they should be requested to organise an intelligence service at the earliest possible date on the lines which we have indicated.

80. It is inevitable that, if this suggestion is adopted, it will raise questions as to the adequacy of the funds and accommodation at the disposal of the Imperial Institute at the present time, but we are strongly of opinion that there is no service upon which money devoted to agricultural research could more prudently be spent than upon arrangements for collecting, recording, and disseminating the results of investigations in agricultural science, and that the adoption of our recommendation would result in the most economical as well as the most efficient method of providing for this very important service.

3. RECOMMENDATIONS OF THE COLONIAL AGRICULTURAL RESEARCH SERVICE ORGANISATION COMMITTEE.

(Extracts from a Circular Letter to Colonial Governments dated 11th August, 1927.)

" Some explanation is desirable as to the importance attached by the Committee to the establishment of the Agricultural Research Council in advance of the inauguration of the single Colonial Agricultural Research Service. The Committee are in general agreement as to the functions of the Council recommended in paragraph 25 of the Report of the Conference Committee. It is, however, recognised that no final definition of the work of the Council can be laid down until after the Imperial Agricultural Research Conference has met in October next, when the question of establishing further Imperial Bureaux to deal with soil science and plant genetics is likely to be considered. In any event, it is agreed that the Council will have to deal with the following important matters :—"



"(e) The collection and publication of information where this is not already done by existing agencies;"

* * * * *

"The Committee are unanimous in the opinion that the Intelligence Staff already existing at the Imperial Institute should be regarded as the nucleus of the organisation now contemplated as regards the collection and publication of information, and that the Council should build on what is already being done at the Institute, and should in no way attempt to create a separate organisation of its own. While the Imperial Institute is primarily concerned with bringing the produced output to the notice of the utiliser, the Council will be more particularly concerned with the actual producer and grower of the crop. It is recognised, however, as important that the closest possible touch should be maintained between the two bodies in their closely related spheres, and that the intelligence work to be initiated by the Council should be regarded as complementary to that of the Imperial Institute. In particular, the Council should interlock with the Plant and Animal Products Council of the Institute.

"The Committee are confident that the arrangements which they will propose in this respect will be found entirely satisfactory and that excellent results will be secured by the linking up of agricultural research in the Colonies with the work done by the Imperial Institute."

4. PUBLICATION OF ANNUAL REPORTS

Memorandum by Dr. E. J. BUTLER, Director, Imperial Bureau of Mycology.

In suggesting remedies to the defects in the present system of permanently recording the results of work done year by year in the various Dominion and Colonial Departments, I would be inclined to attach great importance to the publication by each Department of an adequate annual report, each section written and signed by the officer responsible for that section and the whole reviewed by the head of the Department. This is the practice in many Departments at present, but by no means in all. The annual reports that we receive in this Bureau are frequently of such value in giving early information on the work in progress in a particular Dominion or Colony, and of the results obtained at each stage, that it is our practice to give priority to them in preparing the abstracts for each monthly issue of our *Review*. In some cases the annual report of each section terminates with a list of papers published by the staff during the period under review. This should be made general. The annual report itself should, if properly prepared, contain a

summary of the work which has preceded the publication of each paper (possibly spread over several previous reports), so that a separate summary of the contents of each paper in the list is not required. Admirable examples of these reports can be found in those of the Canadian Experimental Stations and Field Laboratories, the Scientific Reports of the Agricultural Research Institute, Pusa, and reports of various Provincial Departments of Agriculture in India, and of many Continental and American Experiment Stations and Departments.

5. INDIA : MEMORANDUM.

The desirability of establishing in London a Publicity Bureau with a view to keeping such of His Majesty's subjects as are interested in agriculture and allied industries informed as to the scientific methods which have been given results of economic value in different parts of the Empire.

By the Agricultural Adviser to the Government of India.

The public in general do not know what is being done by our scientists. The consequence is that confidence in the potentialities of scientific research is lacking, and this lack of confidence in turn results in research and research institutions being starved for want of funds. The fault lies, partly at least, with the scientists themselves. They do not give sufficient publicity to the practical results which they obtain. These results are published in scientific journals which the layman has no desire to read, because they are presented in technical language which he does not understand. It is no exaggeration to say that in these days of specialization many of our publications are too technical to be appreciated even by scientists working in fields of research other than those with which the publications deal.

Owing to the paucity of popular records of the work done in the field of scientific agriculture in India, even our most progressive farmers are not cognizant with the results obtained in provinces other than their own : of the work done in other parts of the Empire they know nothing at all. The success of any scheme devised for the co-ordination of publicity work in the Empire would depend on the extent to which the different parts thereof are prepared to co-operate in working it. Co-ordination within India itself in short should be a necessary preliminary to India's participation in any such scheme.

Co-ordination as far as India is concerned could, in my opinion, be effected through the Imperial Department of Agriculture for the Government of India already publishes the Agricultural Journal of India, the Journal of the Central Bureau of Animal Husbandry and

Dairying, the Pusa series of Memoirs and Bulletins dealing with agriculture and veterinary subjects, and the Proceedings of the Board of Agriculture in India. All these are edited by the Agricultural Adviser to the Government of India. As far as officials are concerned these publications largely meet our requirements for the present. They do not, on the other hand, meet the needs of our leading farmers; for them they are much too technical. When Director of Agriculture in the Central Provinces the writer of this memorandum brought out in English and the local vernaculars a series of popular bulletins and a small book in which the results obtained by the Department were presented in simple non-technical language. For these publications there was a big demand in rural areas ; many thousand of copies have been sold up to date.

In some provinces periodicals giving a popular account of the work done by the Department are published, but work of this kind has so far been undertaken on a very insignificant scale, for the Imperial and Provincial Departments of Agriculture in India are much understaffed and the officers serving therein find but little time for journalism of any kind. Moreover, it is an accepted fact that scientists have, as a rule, but little bent for journalism. In my opinion each Department of Agriculture in India should have on its staff a publicity officer to interpret for the literate farmer the scientific results obtained by the Department in the laboratory and in the field. The duty of the publicity officer on the staff of the Imperial Department would be to take charge of its publication branch, to co-ordinate the publicity work done in the province, and to act as India's Publicity officer in any publicity scheme drawn up for the Empire.

For the Empire as a whole there is as yet no organisation by means of which research workers and farmers in one part of the Empire can be kept in touch with the attainment of workers in other parts. Owing to financial stringency research workers in India cannot afford to subscribe for more than a limited number of the agricultural publications published in other parts of the Empire. Moreover, they are busy men and cannot afford the time required to wade through numerous publications on the off-chance of finding something that may be of use to them. As for our leading farmers they do not even know of the existence of such publications, though some of the more enterprising of them subscribe for, and read with advantage to themselves American bulletins and leaflets. Our more advanced farmers in India have got a somewhat exaggerated opinion of the importance of the scientific work done by the Department of Agriculture in the United States. America is regarded by them as having made great progress in applying science to the advancement of agriculture and for that reason they send their sons to America for training rather than to Great Britain. By giving publicity to the work they are doing, the Federal Department of agriculture in the United States has, moreover, helped to

create in India a demand for agricultural machinery. Our great Empire is so afraid of self-advertisement that "it hugs its soul in solitude," leaving the stunt of advertisement to America.

For the wider dissemination of the results obtained in the field of agriculture by scientific research the Empire should have an Imperial Publicity Bureau in London. This Bureau could arrange for the distribution of agricultural publications dealing with the results of scientific investigations undertaken throughout the Empire. It could also publish an "Empire Experiment Station Record" for the use of agricultural workers both unofficial and official. This publication should be technical and scientific and should give an account of the work done at the various research stations including universities, colleges of agriculture, private research institutions, Government research stations and experimental farms of the Empire. In this record, publications of importance on rural economics, farm accounting and co-operative work might be reviewed.

This Publicity Bureau should publish, too, a series of monthly or quarterly journals—each dealing with a particular subject or group of allied subjects. To commence with the Bureau might publish four journals dealing with (1) crop production, (2) animal husbandry and dairying including animal nutrition and poultry-keeping, (3) crop pests and diseases, and (4) the marketing of Empire products, respectively.

Articles for these journals would be contributed by scientists and others interested in different phases of agriculture. They would also contain articles from publications of the Agricultural Departments of the Empire and abstracts of reviews, reports and bulletins published in the Empire. Each journal should contain, too, a list of the various publications of the Empire dealing with the group of subjects assigned to that particular journal.

The Bureau should issue still another set of publications on the lines of the popular bulletins and leaflets published by the Department of Agriculture in the United States.

These different sets of publications would meet the requirements both of the scientist and the layman, and in my opinion the demand more especially for the journals, popular bulletins and leaflets would be enormous, if the matter for publications was carefully selected and the editing properly done.

In the journals commercial advertisements regarding improved agricultural implements, machinery and other farm appliances could be inserted and information given regarding the kind and quantity of agricultural produce obtainable in different markets. Both trade and agriculture would thus be benefited.

To give effect to this scheme, it would be necessary to set up a Publicity Bureau in London and to maintain a small staff. With the object of making the Bureau as nearly self-supporting as possible, the price fixed for each publication should ordinarily be such as

would cover the cost. A publicity bureau of this kind could also act as an agent for cinema films depicting improved agricultural processes, the growing of plantation crops such as tea, coffee and rubber, and the marketing of the same.

The dissemination of up-to-date information regarding the development of agriculture in the Empire would create a bond of sympathy between the races in the different parts thereof. Indirectly the spread of such information would stimulate trade and commerce. It would pave the way, too, for a greater measure of co-operation in the field of agricultural research and for the more effective co-ordination of research within our far-flung Empire. It would, too, provide a possible foundation for a Royal Empire Society of Agriculture to which elected fellows and members from every part of the King's Dominions might, on payment of an "annual" or "life" subscription, be admitted.

6. UNION OF SOUTH AFRICA: MEMORANDA.

(a) Publication of Scientific Papers.

(G. W. KLERCK, Editor of Publications, Department of Agriculture.)

The Department of Agriculture has a comprehensive system of publications, built up on the results of its scientific research. On what may be termed the "popular" side, it publishes "Farming in South Africa," a monthly paper containing short, practical articles and notes couched in non-technical language; weekly advice leaflets; "Crops and Markets," and bulletins containing information on various farming subjects too lengthy for publication in "Farming in South Africa."

Its scientific publications comprise the Veterinary Reports; Memoirs of the Botanical Survey; "Bothalia," being reports, &c., from the National Herbarium; Entomological Memoirs; a Division of Chemistry series; and a series of Science Bulletins.

In comparison with its population and public administration resources, scientific research into agricultural problems occupies a fairly prominent place in South Africa, a country that is still young in its agricultural development and that consequently needs considerable attention in respect of the fundaments of farming for which purpose the "popular" class of publication is in great demand.

Public administration in connection with the agricultural industry involves comparatively heavy expenditure and the sum allocated for publications has necessarily to be limited; it is devoted to the two classes of publications—"popular" and "scientific."

The scientific publications of the Department are not issued for direct use by the farmer ; indeed, few, if any, even see them. Their purpose is rather to record the results of research for the benefit of scientists in South Africa and beyond its borders. Comparatively few copies are required in South Africa ; the large bulk goes overseas.

In view of the limits of financial resources, purely scientific publications are reduced to the minimum, and there is always the possibility that matters of considerable value to scientists in other parts of the world may be denied publication owing to the lack of funds.

The question arises therefore whether in view of the international character of most scientific papers, there is not room for interstate co-operation in the publication thereof, particularly as such publication is the essential corollary to scientific research.

The question of obtaining greater scope for the publication of scientific reports and their circulation throughout all Government Departments or Institutions interested either by means of the proposed organisation for co-ordinating scientific research throughout the Empire, in respect of which a separate memorandum has been issued, or by such other means as may be deemed expedient or desirable, is therefore submitted for discussion.

Editing, publication and distribution of scientific papers is specialised work, and in this respect also the control suggested above may prove economical and inducive to best service.

It is not proposed to elaborate here the scheme whereby the above proposal could be given effect to. The suggestion is made in the hope that whatever discussion it may evoke will lead to a closer co-operation between scientists in securing that universally important end—the proper publicity of scientific data.

(b) Establishment of an Imperial Research Committee.

(W. J. LAMONT, Division of Agricultural Economics and Marketing.)

The subject of Research was considered by a special Sub-Committee of the Imperial Conference in 1926, and a report published as Appendix XII in Cmd. 2769.

The Conference subsequently commended Part I of the report of the Sub-Committee and the suggestions therein contained to the favourable consideration of the respective Governments and in doing so made special mention of the needs of :

- (1) an active prosecution of research ;
- (2) the fullest practicable co-operation between organisations dealing with research ;
- (3) the quick and orderly exchange of results ;
- (4) the fullest possible discussion of problems of common interest.

It has occurred to me that the present agricultural research Conference might with advantage discuss the possibility of establishing a central organisation in London for the purpose of giving practical effect to some of the suggestions contained in the Sub-Committee's recommendations.

Probably the most important aspect of agricultural research is that of securing a full measure of co-operation between Dominions.

As a first step towards this end it would seem desirable that some machinery should be brought into being whereby the various Dominions would be kept fully advised of all agricultural research work in progress throughout the Empire.

The Conference might consider the question of bringing into existence an Imperial Agricultural Research Committee with headquarters in London and Sub-Committees in each of the Dominions.

For the Central Committee in London the present organisation of the Imperial Institute might be explored to ascertain how far the existing machinery could be utilized, or what additions may be necessary to permit of the Institute functioning in the direction desired.

The main work of the Central Committee would be to supervise the collection and publication in suitable form of all agricultural research work in progress in Great Britain and the Dominions. Each Dominion Sub-Committee would be charged with the duty of supplying the information required for the purpose in respect of its Dominion.

It is not suggested that Research work should be controlled or initiated by the Central Committee. There is a crying need for a greater interchange of ideas between Dominions, and to secure the desired co-operation it is necessary that full information regarding agricultural research projects under investigation should be available. The existing Bureaux of Entomology and Mycology are in this respect serving a valuable purpose, and it is not proposed that the work of the Bureaux should in any way be modified or curtailed. There are, however, a great many projects under investigation which are not covered by these bureaux, and it is to establish what would be in reality a clearing house for agricultural research of all kinds that the establishment of a Central Committee is suggested for consideration.

The work of the Central Committee would be complementary and additional to that performed by the bureaux in so far as publication is concerned.

7. NIGERIA: MEMORANDUM.

By what methods of publication, circulation, etc., can the progress of results of research best be made available throughout the Empire?

- (i) For many years International Veterinary Congresses have been held in Europe; Veterinary Conferences at which

representatives of the Union of South Africa, Kenya, Tanganyika, Uganda, Rhodesia, Belgian Congo and Madagascar, are present are occasionally held. The proceedings of these Congresses and Conferences are published in full detail.

- (ii) Special reports by the Director of Veterinary Education and Research, Union of South Africa ; Director of Veterinary Research, Southern Rhodesia ; Veterinary Pathologist, Tanganyika ; Veterinary Pathologist, Kenya ; and Directors of other African Veterinary Institutes are published as well as those on veterinary subjects in India, and also the annual reports of Veterinary Laboratories in the Colonies and Dominions, copies of which are sent to different Colonial Veterinary Laboratories.

There is a large number of scientific publications dealing with Tropical Veterinary Science, foreign as well as British, published and circulated generally to all Colonial Veterinary Institutes.

8. BRITISH WEST AFRICAN AGRICULTURAL CONFERENCE HELD AT IBADAN, MARCH, 1927 : .RESOLUTION.

The Committee recommend that the following expression of opinion should be forwarded by this Conference to the Agricultural Research Conference to be held in England this Autumn (1927) :

- (i) The Chemical Committee of the West African Research Conference is of the opinion that a Bureau of Soil Science, including a tropical section, would be of great value.
- (ii) The Committee suggest that the functions of such a Bureau should include—

The collection and collating of the results of soil investigations in the various colonies and the publication of a Review comparable with the Reviews of the Bureaux of Entomology or Mycology.

9. GOLD COAST : MEMORANDUM.

Results of Tropical Agricultural Research.

It is difficult to ascertain what has been and is being done in tropical agricultural research. The requirements of the entomological and mycological branches are fairly well provided for by the reviews

of current literature published by the Imperial Bureaux of Mycology and Entomology. Publications on similar lines are required to provide for the requirements of botanical, chemical and general agricultural workers.

A résumé of what has been accomplished with all the various tropical crops is highly desirable. Information at present is scattered through large numbers of publications of many countries and it is practically impossible for the tropical possessions, particularly the smaller ones, to collect the complete series.

